

CLAIMS

1. A method of testing signal characteristics of a communication formed from digital-
5 network packets having a transport protocol, comprising:
 receiving one or more reference-digital-network packets corresponding to a
predetermined clip, the one or more reference-digital-network packets having the transport
protocol;
 extracting one or more reference-real-time protocol payloads from the one or more
10 reference-digital-network packets as a reference clip;
 selecting a reference clip algorithm;
 generating one or more reference key values associated with the reference clip and with
the reference clip algorithm;
 receiving one or more current-digital-network packets having the transport protocol;
15 extracting one or more current payloads from the one or more current-digital-network
packets as a current clip;
 selecting a current clip algorithm;
 generating one or more current key values associated with the current clip and with the
current clip algorithm; and
20 comparing the one or more current key values with the one or more reference key values
to determine an occurrence of a match between the current clip and the reference clip.
2. The method of Claim 1, wherein the predetermined clip includes an audio clip and the one
or more current-digital-network packets include an audio signal.
- 25 3. The method of Claim 2, wherein the transport protocol includes a media transport
protocol.
4. The method of Claim 2, wherein the transport protocol includes at least one CODEC
30 format.

5. The method of Claim 4, wherein the at least one CODEC format is a selected one of a G.711 format, a G.723 format, and a G.729 format, an AMR format, a global system for mobile communications (GSM) format, a G.726 format, a G.722 format, a G.728 format, and video
5 CODEC formats MPEG2 and MPEG4.

6. The method of Claim 1, wherein the predetermined clip includes a video clip and the one or more current-digital-network packets include a video signal.

10 7. The method of Claim 1, wherein the comparing comprises:
comparing the one or more current key values with the one or more reference key values associated with the reference clip; and
comparing the one or more current key values with one or more other reference key values associated with a plurality of reference clips.

15 8. The method of Claim 1, wherein the comparing comprises:
determining a number of matches between the one or more current key values and the one or more reference key values associated with the reference clip; and
deeming the current-digital-network packets to match the reference clip if the number of
20 matches is greater than or equal to a predetermined threshold value.

9. The method of Claim 1, wherein the reference clip algorithm is the same as the current clip algorithm, the reference clip algorithm to select the one or more reference key values by mapping a number of bits beginning at respective one or more byte offsets in the one or more reference
25 real-time protocol payloads, and the current clip algorithm to select the one or more current key values by the same mapping of the same number of bits beginning at respective one or more byte offsets in the one or more current real-time protocol payloads.

10. The method of Claim 1, wherein the reference clip algorithm, the current clip algorithm,
30 the reference-digital-network packets, and the current-digital-network packets are associated with

a CODEC format.

11. The method of Claim 1, further including:

recording at least one of the reference clip and the one or more reference key values

5 associated with the reference clip; and

retrieving at least one of the recorded reference clip and at least one of the recorded one or more reference key values.

12. The method of Claim 1, further including:

10 identifying a CODEC format associated with the one or more current-digital-network packets; and

selecting the current clip algorithm in accordance with the identified CODEC format.

13. The method of Claim 1, further including:

15 selecting the reference clip algorithm and the current clip algorithm from among a plurality of clip algorithms in accordance with a CODEC format, the reference-digital-network packets and the current-digital-network packets associated with the CODEC format.

14. The method of Claim 13, wherein the CODEC format is selected from among a G.711
20 format, a G.723 format, and a G.729 format, an AMR format, a global system for mobile communications (GSM) format, a G.726 format, a G.722 format, a G.728 format, and video CODEC formats MPEG2 and MPEG4.

15. A method of testing signal characteristics of a communication formed from digital-
25 network packets having a transport protocol, comprising:

receiving one or more digital-network packets having the transport protocol; and

examining digital characteristics of the one or more digital-network packets with at least one silence algorithm to determine if the digital-network packets contain a period of silence.

30 16. The method of Claim 15, wherein the transport protocol includes a media transport

protocol.

17. The method of Claim 15, wherein the transport protocol includes at least one CODEC format.

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18. The method of Claim 15, wherein the at least one silence algorithm is associated with selected byte locations of the digital-network packets.

19. The method of Claim 18, wherein the transport protocol includes at least one CODEC format and the at least one silence algorithm is associated with the at least one CODEC format.

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20. The method of Claim 15, wherein the examining the digital characteristics includes:
selecting a number-of-silence-bytes threshold value;

counting a number of silence bytes in one of the digital-network packets;

15 comparing the number of silence bytes in the one of the digital-network packets with the number-of-silence-bytes threshold value; and

deeming the one of the digital-network packets to include silence if the number of silence bytes in the one of the digital-network packets is greater than or equal to the number-of-silence-bytes threshold value.

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21. The method of Claim 15, wherein the examining the digital characteristics includes:
selecting a number-of-packets threshold value;

counting digital-network packets for which selected bytes of the digital-network packets remain substantially constant in value; and

25 deeming the digital-network packets to include silence if the number of digital-network packets for which the selected bytes of the digital-network packets remain substantially constant in value is greater than or equal to the number-of-packets threshold value.

22. The method of Claim 15, wherein the examining the digital characteristics includes:
selecting a number-of-packets threshold value;

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counting digital-network packets for which selected bytes of the digital-network packets remain constant in value; and

deeming the digital-network packets to include silence if the number of digital-network packets for which the selected bytes of the digital-network packets remain constant in value is greater than or equal to the number-of-packets threshold value.

23. A computer program medium having computer readable code thereon, to test signal characteristics of a communication formed from digital-network packets having a transport protocol, including instructions for:

10 receiving one or more reference-digital-network packets corresponding to a predetermined clip, the one or more reference-digital-network packets having the transport protocol;

extracting one or more reference-real-time protocol payloads from the one or more reference-digital-network packets as a reference clip;

15 selecting a reference clip algorithm;

generating one or more reference key values associated with the reference clip and with the reference clip algorithm;

receiving one or more current-digital-network packets having the transport protocol;

20 extracting one or more current payloads from the one or more current-digital-network packets as a current clip;

selecting a current clip algorithm;

generating one or more current key values associated with the one or more current payloads and with the current clip algorithm; and

25 comparing the one or more current key values with the one or more reference key values to determine an occurrence of a match between the current clip and the reference clip.

24. The computer program medium of Claim 23, wherein the predetermined clip includes an audio clip and the one or more current-digital-network packets include an audio signal.

30 25. The computer program medium of Claim 24, wherein the transport protocol includes a

media transport protocol.

26. The computer program medium of Claim 24, wherein the transport protocol includes at least one CODEC format.

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27. The computer program medium of Claim 26, wherein the at least one CODEC format is a selected one of a G.711 format, a G.723 format, and a G.729 format, an AMR format, a global system for mobile communications (GSM) format, a G.726 format, a G.722 format, a G.728 format, and video CODEC formats MPEG2 and MPEG4.

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28. The computer program medium of Claim 23, wherein the predetermined clip includes a video clip video and the one or more current-digital-network packets include a video signal.

29. The computer program medium of Claim 23, wherein the comparing includes instructions for:

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comparing the one or more current key values with the one or more reference key values associated with the reference clip; and

comparing the one or more current key values with one or more other reference key values associated with a plurality of reference clips.

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30. The computer program medium of Claim 23, wherein the comparing includes instructions for

determining a number of matches between the one or more current key values and the one or more reference key values associated with the reference clip; and

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deeming the current-digital-network packets to match the reference clip if the number of matches is greater than or equal to a predetermined threshold value.

31. The computer program medium of Claim 23, wherein the reference clip algorithm is the same as the current clip algorithm, the reference clip algorithm including instructions for selecting the one or more reference key values by mapping a number of bits beginning at respective one or

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more byte offsets in the one or more reference real-time protocol payloads, and the current clip algorithm including instructions for selecting the one or more current key values by the same mapping of the same number of bits beginning at respective one or more byte offsets in the one or more current real-time protocol payloads;

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32. The computer program medium of Claim 23, wherein the reference clip algorithm, the current clip algorithm, the reference-digital-network packets, and the current-digital-network packets are associated with a CODEC format.

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33. The computer program medium of Claim 23, further including instructions for:
recording at least one of thereference clip and the one or more reference key values associated with the at least one reference clip; and
retrieving at least one of the recorded reference clip and at least one of the recorded reference key values.

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34. The computer program medium of Claim 23, further including instructions for:
identifying a CODEC format associated with the one or more current-digital-network packets; and
selecting the current clip algorithm in accordance with the identified CODEC format.

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35. The computer program medium of Claim 23, further including instructions for:
selecting the reference clip algorithm and the current clip algorithm from among a plurality of clip algorithms in accordance with a CODEC format, the reference-digital-network packets and the current-digital-network packets associated with the CODEC format.

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36. The computer program medium of Claim 23, wherein the CODEC format is selected from among a G.711 format, a G.723 format, and a G.729 format.

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37. A computer program medium having computer readable code thereon, to test signal characteristics of a communication formed from digital-network packets having a transport

protocol, including instructions for:

receiving digital-network packets having the transport protocol; and

examining digital characteristics of the digital-network packets with at least one silence algorithm to determine if the digital-network packets contain a period of silence.

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38. The computer program medium of Claim 38, wherein the transport protocol is the real-time transport protocol (RTP) format.

39. The computer program medium of Claim 37, wherein the transport protocol includes at least one CODEC format.

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40. The computer program medium of Claim 37, wherein the instructions for examining the digital characteristics include instructions for:

selecting a number-of-silence-bytes threshold value;

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counting a number of silence bytes in one of the digital-network packets;

comparing the number of silence bytes in the one of the digital-network packets with the number-of-silence-bytes threshold value; and

deeming the one of the digital-network packets to include silence if the number of silence bytes in the one of the digital-network packets is greater than or equal to the number-of-silence-bytes threshold value.

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41. The computer program medium of Claim 37, wherein the instructions for examining the digital characteristics include instructions for:

selecting a number-of-packets threshold value;

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counting digital-network packets for which selected bytes of the digital-network packets remain substantially constant in value; and

deeming the digital-network packets to include silence if the number of digital-network packets for which the selected bytes of the digital-network packets remain substantially constant in value is greater than or equal to the number-of-packets threshold value.

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42. The computer program medium of Claim 37, wherein the instructions for examining the digital characteristics include instructions for:

selecting a number-of-packets threshold value;

counting digital-network packets for which selected bytes of the digital-network packets

5 remain constant in value; and

deeming the digital-network packets to include silence if the number of digital-network packets for which the selected bytes of the digital-network packets remain constant in value is greater than or equal to the number-of-packets threshold value.

10 43. A processor to test signal characteristics of a communication formed from digital-network packets having a transport protocol, comprising:

a digital-network-packet receiver to receive one or more reference-digital-network packets corresponding to a predetermined clip and to receive one or more current-digital-network packets;

15 a payload extractor coupled to the digital-network packet receiver to extract, as a reference clip, one or more reference payloads from the one or more reference-digital-network packets and to extract, as a current clip, one or more current payloads from the one or more current-digital-network packets;

20 a key generator having a reference clip algorithm to form one or more reference key values associated with the one or more reference payloads and a current algorithm to form one or more current key values associated with the one or more current payloads;

a reference-key-and-reference-clip database coupled to the payload extractor to store at least one of the reference clip and the one or more reference key values; and

25 a comparison processor coupled to the key generator and to the reference-key-and-reference-clip database, the comparison processor to compare the one or more reference key values with the one or more current key values to determine an occurrence of a match between the current clip and the reference clip.

30 44. The processor of Claim 43, wherein the predetermined clip includes an audio clip and the current-digital-network packets include an audio signal.

45. The processor of Claim 43, wherein the transport protocol includes a media transport protocol.

5 46. The processor of Claim 43, wherein the transport protocol includes at least one CODEC format.

47. The processor of Claim 46, wherein the at least one CODEC format is a selected one of a G.711 format, a G.723 format, and a G.729 format, an AMR format, a global system for mobile
10 communications (GSM) format, a G.726 format, a G.722 format, a G.728 format, and video CODEC formats MPEG2 and MPEG4.

48. The processor of Claim 43, wherein the predetermined clip includes a video clip and the current-digital-network packets include a video signal.

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49. The processor of Claim 43, wherein the comparison processor is adapted to compare the one or more current key values with the one or more reference key values associated with a plurality of reference clips.

20 50. The processor of Claim 43, wherein the comparison processor is adapted to determine a number of matches between the one or more current key values and the one or more reference key values associated with the reference clip, and to deem the one or more current-digital-network packets to match the reference clip if the number of matches is greater than or equal to a predetermined threshold value.

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51. The processor of Claim 43, wherein the reference clip algorithm is the same as the current clip algorithm, the reference clip algorithm to select the one or more reference key values as a number of bits beginning at respective one or more byte offsets in one or more reference payloads, and the current clip algorithm to select the one or more current key values as the same
30 number of bits beginning at respective one or more byte offsets in the one or more current

payloads.

52. The processor of Claim 43, wherein the reference clip algorithm, the current clip algorithm, the reference-digital-network packets, and the current-digital-network packets are associated with a CODEC format.

53. The processor of Claim 43, further including at least one silence algorithm coupled to the payload extractor to detect if the current-digital-network packets contain silence.

54. The processor of Claim 53, wherein the at least one silence algorithm is to:
select a number-of-silence-bytes threshold value;
count a number of silence bytes in one of the digital-network packets;
compare the number of silence bytes in the one of the digital-network packets with the number-of-silence-bytes threshold value; and

deem the one of the digital-network packets to include silence if the number of silence bytes in the one of the digital-network packets is greater than or equal to the number-of-silence-bytes threshold value.

55. The processor of Claim 53, wherein the at least one silence algorithm is to:
select a number-of-packets threshold value;
count digital-network packets for which selected bytes of the digital-network packets remain substantially constant in value; and
deem the digital-network packets to include silence if the number of digital-network packets for which the selected bytes of the digital-network packets remain substantially constant in value is greater than or equal to the number-of-packets threshold value.

56. The processor of Claim 53, wherein the at least one silence algorithm is to:
select a number-of-packets threshold value;
count digital-network packets for which selected bytes of the digital-network packets remain constant in value; and

deem the digital-network packets to include silence if the number of digital-network packets for which the selected bytes of the digital-network packets remain constant in value is greater than or equal to the number-of-packets threshold value.